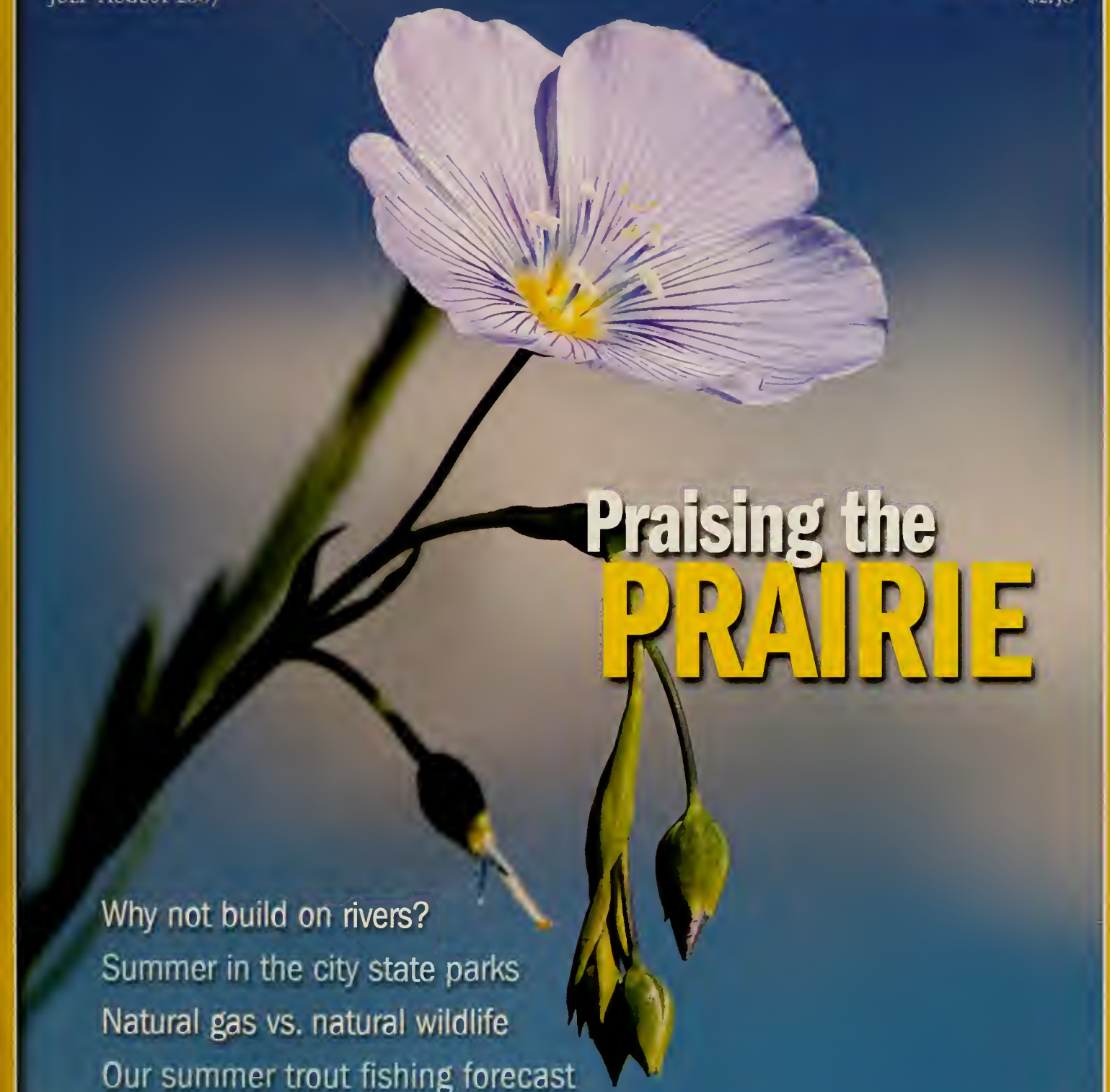
INSIDE: MONTANA TAKES A STAND ON THE BIGHORN RIVER

Montana Outdoors

JULY–AUGUST 2007 $2.50



Praising the PRAIRIE

Why not build on rivers?
Summer in the city state parks
Natural gas vs. natural wildlife
Our summer trout fishing forecast

Montana Fish, Wildlife & Parks

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MONTANA OUTDOORS STAFF
Tom Dickson, Editor
Luke Duran, Art Director
Debbie Sternberg, Circulation Manager

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Montana Outdoors

JULY–AUGUST 2007

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SERPENTINE The Red Rock River as it snakes through the Centennial Valley shows the dynamic nature of a waterway and its vast floodplain. See page 36 to learn why river development is being debated in communities throughout Montana. Photo by Chris Boyer.

FRONT COVER *Linum lewisii*, Lewis's blue flax, in full bloom on an eastern Montana prairie. We celebrate prairies in prose and photos starting on page 14. Photo by Jeff Van Tine.

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Row, Derrick, row!

Thank you for the article on rowing technique and safety ("Safely Down the Stream," May–June) by Neale Streeks and the accompanying illustrations. All my life I've been a wading fly-fisherman, but I have to say many a time I've been envious of rowers floating past because they seem to be able to cover so much more water with their flies. I didn't think I could ever figure out how to work the oars. Thanks to your article, I think I might be able to give it a try.

Derrick McGowan
Portland, OR

New threat

The same day that I received my May–June issue of *Montana Outdoors* with the article on quagga mussels ("Quaggas Muscle into the West,") *USA Today* ran a story entitled "Ebola-like Virus Killing Fish in the Great Lakes." The story says that "some scientists fear [it] could trigger disaster for the nation's freshwater fish." Both articles point out how important it is to clean your fishing equipment and boats to prevent the spread of aquatic nuisance species in uncontaminated waters.

Bill Blanchard
Indianapolis, IN

Sleepless in Seattle

Do wolverines howl? I heard a strange sound in the woods that sounded kind of like a coyote gone nuts combined with a hyena. I'm used to coyote and wolf howls, but this was different and much scarier.

Adela Santisteban
Seattle, WA

Brian Giddings, FWP Furbearer Program coordinator, responds: "I have no idea what you actually heard, but I do know that in late spring and summer young foxes can produce a terrible-sounding series of shrieks or screams. Or it could have been a fox or other animal being attacked by a great horned owl. The other night near my house (which is in a wooded area) I heard an awful animal noise that I'd never heard before, and I'm sure it wasn't a fox. I've spent a lot of time in the woods, but that sound made the hair stand up on the back of my neck and sent a quick shiver down my spine—something that hasn't happened to me for a long time.

We need one of those

In your article "Follow That Fish" (May–June 2007), I note that you have the Blackfoot River entering the Clark Fork River a few miles "west" of Missoula. Page 53 of my *Montana Atlas and Gazetteer* would actually indicate that direction is actually east of Missoula a few miles.

Don Pruder
Richardson, TX

Urban deer solution: kittens

For several days while I was painting the trim on my corner window, the neighbor's two young kittens came over to visit me. I enjoyed their company, and they were both overly friendly, as kittens are, always playing with something and looking for new things in their young lives. Today, the black and white cat was alone and doing its normal rubbing up against my ankles. It then ran over about 60 feet and charged up a tree. Shortly thereafter a young forkhorn buck came and lay down close to the tree. Deer often lie down on this little rise so they can see around. I noticed the kitten, looking down from the tree, was taking an interest in the buck. When it jumped to the ground, the buck seemed unconcerned. The kitten started a belly crawl stalk. When the buck turned around to watch, the kitten jumped to the side. But soon it moved close enough to rub shoulders with the deer. It then walked around and explored the rest of the strange, new animal. When the deer's tail flickered, the kitten ran off but then came back for a closer inspection, even swatting at it with its paws. The buck appeared annoyed, but other than occasionally quivering its rear haunch it took no action to stop the kitten from its play. Finally, apparently bothered by the laughter from me and a neighbor who had stopped to observe the spectacle, the deer stood up and left. Isn't nature amazing?

Rod Dietz
Missoula

Think *variable*-powered scope

In the October–November 2006 article about the pronghorn ("On Montana Safari"), the writer states, "While you're checking out a herd of antelope with your 8x binoculars, they are probably checking you out with their 8x eyesight." I've heard this impossible comparison many times over the years. If this were the case, the pronghorn would have become extinct eons ago. When a buck detected a doe in heat, and he approached his mate to a distance of approximately 24 feet, he would no doubt prepare to mate with her at this point, since she would appear to be only 3 feet away. Thus, the probability of breeding would be extremely slim, not to mention the comical performance displayed.

Clair Jensen
Billings

The eyesight of antelope, like that of humans and other animals, is variable, allowing it to focus both far away to see distant objects and close up to eat and perform other necessary activities.

■ We welcome your comments, questions, and letters to the editor. We'll edit letters as needed for accuracy, style, and length. Mail your letter to: Montana Outdoors, P.O. Box 200701, Helena, MT 59620-0701. Or e-mail us at: tdickson@mt.gov.

TOM DICKSON

THE SESSION

Several bills passed by the 2007 Montana Legislature and signed by Governor Brian Schweitzer will affect FWP's management of Montana's fish, wildlife, and parks. Most significant was the authorization of $10 million from the state general fund for one-time purchases of fishing access sites and state parks, part of the governor's Square Deal for Montanans. Another successful component of the square deal package was a free conservation license for kids age 12 to 14 and adults over age 62, an initiative designed to get more people out fishing. Other legislation that passed:

- To reduce the amount of illegal license use, new legislation makes it clear that giving someone your duplicate (replacement) license is against the law.
- Penalties were stiffened for illegally outfitting without a license. Previously fines were so low that we often heard it was less costly to outfit illegally and be fined than to be a fully licensed outfitter.
- A new law makes clear that it is illegal to drill groundwater wells where the water removal reduces stream flows.
- The legislature authorized FWP to add the bison, pronghorn, and mountain lion to the list of big game species licenses for which the department can sell chances to win a SuperTag.
- The sunset provision on the Future Fisheries Program was lifted, allowing the program to continue. And the sunset provision on the Water Leasing Program was extended another ten years. The program allows landowners to lease water rights to FWP for instream flow. In addition, FWP now can permanently convert a limited number of water rights it owns to instream flow.
- A new law clarifies that landowners who agree, for conservation purposes, to not use water are not abandoning their water right but rather are donating the water back to the river.
- A Livestock Loss Reduction and Mitigation Board was established with the Montana Department of Livestock to help producers reduce the risk of wolf predation and reimburse them for the cost of lost livestock.
- The legislature established a wolf license and authorized the FWP Commission to hold a lottery or auction for a wolf or grizzly license when those species are removed from the federal Endangered Species List.

Bills that didn't pass include ones that would have required statewide streamside setbacks for new housing and other development along rivers; improved the enforcement of laws prohibiting boating under the influence of alcohol; and given FWP game wardens the authority to cite minors possessing alcohol and drugs at fishing access sites and other FWP lands. (Currently, a warden needs to call the local county sheriff, who then must drive out to the site to issue citations.) Other unsuccessful bills attempted to address the long-term funding and management of the Fort Peck fish hatchery. None of these issues will go away, and FWP is committed to seeing them resolved.

For now, all of us at FWP hope you enjoy the summer and have a great time taking advantage of Montana's many tremendous outdoor recreational opportunities.

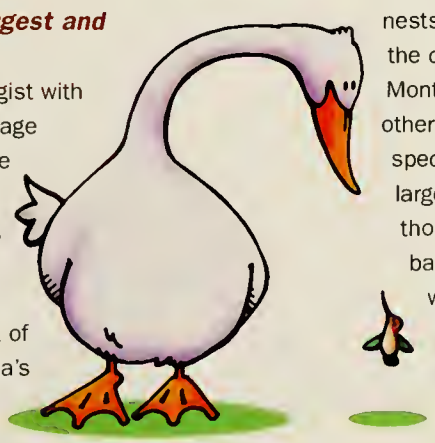
—M. Jeff Hagener, *Director, Montana Fish, Wildlife & Parks*

NATURAL WONDERS

Illustration by Peter Grosshauser

Q *What are the largest and smallest birds in Montana? Do they also make the largest and smallest nests?*

A Paul Hendricks, a zoologist with the Montana Natural Heritage Program, says that its wide wingspan and 23 pounds make the trumpeter swan, which nests in the Red Rock Lakes National Wildlife Refuge, 50 miles west of West Yellowstone, Montana's largest bird. The smallest, weighing just 0.1 ounce, is the calliope hummingbird. The smallest nests are made by the calliope and Montana's four other hummingbird species, and the largest nests are those built by bald eagles, which add new material each year until the structures can weigh a ton or more.



Q *How do I find out current stream levels?*

A Go to the website that's on the "favorites" Internet browser of every fly-fisherman in Montana: The U.S. Geographical Survey website (http://waterdata.usgs.gov/mt/nwis). Go to the river you're interested in and find current flow, long-term flow for each day, and a graph showing how water levels have risen or dropped in the past week or month.

Best known for trout, Montana also holds a surprising number of channel catfish waters.

BILL LINDNER

Catch a cat

Montana is home to hundreds of outdoor recreation and conservation groups, from the Rocky Mountain Elk Foundation to the Bull Lake Rod and Gun Club. A new one caught our eye recently: the Montana Catfish Association.

Established in 2006, the organization exists to "promote the sport of catfishing and specifically catfishing in the great state of Montana," says its website, montanacats.com. The site displays photos of Big Sky Country catfish, advice on where to catch the whiskered fish, and a chat board where anglers swap tips and tactics.

Catfishing here in America's trout mecca? Yes. Hundreds of miles of rivers and several reservoirs in eastern Montana offer good catfishing from late spring until the end of summer. Top waters include the lower Musselshell, Milk, and lower Yellowstone rivers, as well as Fort Peck Lake and Nelson Reservoir (home of the new channel catfish state record, a 29.71-pound bruiser caught in May 2006). These are all buggy areas in summer, so bring mosquito spray.

Montana is home to four members of the catfish family. The largest and most popular with anglers is the channel cat. This native species, which averages about 2 pounds, is found throughout the Missouri River drainage as far west as the upper Teton and Marias rivers, and in the Yellowstone River and major tributaries, including the Bighorn, Tongue, and Powder rivers.

Two other native catfish family species are the black bullhead and the stonecat. The stonecat runs about 6 inches long and is found in the Missouri River and the lower Yellowstone River watershed. Averaging about 10 inches long, the black bullhead is a smaller version of the catfish, with the same chin barbels and tasty flesh. It is found throughout southeastern Montana in rivers and streams, and in a handful of ponds across the state. (Another bullhead, the non-native yellow, is found in the lower Yellowstone River and Tongue River.)

Black or grizzly?

If you visit or live in Montana, there's a chance of seeing a grizzly or a black bear when hiking or hunting, especially in mountainous areas. But how do you know which bear is which?

FWP recently launched a new interactive website that helps people identify the two species. "We created the site to reduce the number of federally threatened grizzly bears accidentally shot by hunters," says Thomas Baumeister, chief of the FWP Education Bureau.

Bear hunters are required to visit the website and pass a test before obtaining a bear hunting license. The bear identification training and test are also a fun way for people who don't hunt to learn how to tell the two bear species apart.

Baumeister says the website makes use of new technology to simulate an actual hunting situation. Two hunters spy a bear and then examine it carefully with

The new FWP website has tips for determining whether this is a grizzly bear or a brown-phase black bear.

MONTANA HUNTING SEASON OPENERS

September

1 Sage grouse, sharp-tailed grouse, mountain grouse, Hungarian partridge, mourning dove, wild turkey, common snipe, upland birds for falconry

Archery deer, elk, antelope

15 Backcountry deer and elk, bighorn sheep, moose, mountain goat, black bear

29 Waterfowl (pending federal approval)

October

7 General antelope

13 Pheasant

21 General deer and elk

binoculars to determine whether it is a grizzly, which would be illegal to shoot, or a legal black bear.

Take the test by visiting the FWP website at fwp.mt.gov and look for "Bear Identification Test" under "Online Services."

DONALD A. HIGGS

Flower power

New guides, websites, and other resources make it easier than ever to identify wildflowers. Montana is home to roughly 1,400 wildflower species, says Scott Mincemoyer, program botanist for the Montana Natural Heritage Program (MNHP). Those beauties range from the alpine glacier poppy, found only in Glacier National Park, to southeastern Montana's uncommon Barr's milkvetch, to the various lupine varieties scattered across the state. Identifying any particular yellow, white, or purple flower can be tough, and that's where guides can help. Mincemoyer says some of the most popular ones are:

- *Wildflowers of Montana*, by Donald Schiemann (Mountain Press);
- *Prairie Wildflowers*, *Alpine Wildflowers*, and *Forest Wildflowers*, all written by Dee Strickler (Falcon Press);
- *Northern Rocky Mountain Wildflowers*, by Wayne Philips (Falcon Press).

Another great wildflower resource is the Montana Native Plant Society's Montana Plant Life website (Montana.plant-life.org). The site contains photos, common and scientific names, and other information on hundreds of Montana species. One of the site's many features is a "flowering time" guide that shows the months when species will most likely be in bloom. Through the website you can also order the remarkable Montana Plant Life CD, which contains more than 8,000 images and other information on every Montana plant species.

Interested in Montana's rare and uncommon wildflowers? Check out the MNHP website (http://nhp.nris.state.mt.us) and click on the plant guide, which provides descriptions, range maps, and information on habitat, ecology, and management for several hundred species.

Midsummer wildflowers brighten the rocky shores of Rock Lake in the Cabinet Mountains Wilderness.

TIM CADY

Trout forecast: low water but good numbers

Trout anglers this summer will be looking for rising fish and rising water levels.

Water levels are down but trout numbers are stable or increasing. That's how best to summarize the latest forecast for most Montana trout streams and rivers this summer. The lower-than-normal flows in many streams is due to a warm spring that melted snowpack earlier than usual. Trout fisheries below dams, which captured the early runoff, should have good flows throughout the state.

A quick review of the state's major trout waters.

Last year the **Madison** was the state's most heavily fished river, producing abundant mid-sized rainbow trout as well as a 30-inch, 10-pound brown caught by outfitter and guide Bob Jacklin of West Yellowstone. The Madison has been a puzzle to biologists because the trout population seems to have become genetically resistant to whirling disease, something that was not thought possible.

Trout populations on the **Missouri River** are slightly below the long-term average but still strong. Rainbow numbers in the Craig section are 2,470 per mile and brown trout numbers are 625 per mile. The combined 3,095 trout per mile is a tad below the combined long-term average of 3,445 per mile. The number of large trout over 17 inches, however, is twice what it was in the 1980s and early 1990s, most likely because far more anglers release their trout than before.

Fishing access site parking areas on the **Bighorn River** were packed with cars and trucks this spring. Don't expect summer to be any different. Though down from the late 1990s, the river's trout population is still 3,000 to 4,000 fish per mile (and recently, for the first time in years, the percentage of rainbows exceeds that of browns). The bad news, as reported beginning on page 9, is that flows from Yellowtail Dam were only 1,500 cfs as of June. Low water pushes small trout from the side channels into the main channel, where they are eaten by big trout. That increases the size of big trout but reduces the total number of trout for the future.

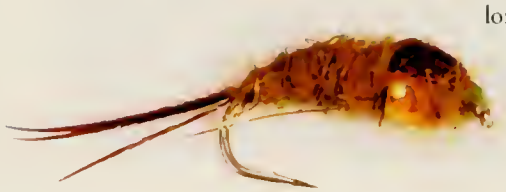
The **Yellowstone River** continues to produce big and numerous trout. Biologists say rainbow and Yellowstone cutthroat trout numbers are above long-term averages, and the brown trout population is just below average. Rainbow numbers on **Rock Creek** and the **Blackfoot River** near Missoula are at historic lows due to whirling disease, but brown trout and westslope cutthroat trout numbers are increasing. Both the Blackfoot and the **Bitterroot** were at drought-alert stage in late May because runoff had come three to four weeks earlier than usual, which didn't bode well for August. The Bitterroot will be helped by releases from Painted Rocks Reservoir.

The **Clark Fork** is not covered much in the national press, but it's a great river with excellent flows and little pressure. Trout numbers per mile are lower than on similar-sized streams, but the lack of other anglers can more than compensate.

An ongoing drought has haunted the **Beaverhead River** for seven years, and the trout population continues to suffer. Though the Beaverhead remains one of the state's top trout waters, numbers are below the long-term average. The good news is that a strong year class of 9- to 11-inch browns, now two years old, is moving through the system and will be decent sized starting in 2008. Currently the highest numbers of 20-plus-inch browns are near and downstream of Dillon.

Brown trout numbers are also down on the **Big Hole River**, but a strong class of two-year-old browns bodes well for the fishing in 2008 and beyond. Also, a small population of massive browns ranging from 22 to 26 inches is found throughout the river.

The **Flathead River** and its three forks are holding up well for cutthroat trout fishing. Both the Flathead and Kootenai are expected to have good flows throughout the year due to steady releases from Hungry Horse and Libby dams, respectively. The **Thompson River** is also looking good for browns and rainbows, though a lack of rain in July could create low water conditions. As with all rivers, you should check current flows at the U.S. Geological Survey website before you go (http://waterdata.usgs.gov/mt/nwis).



Time-lapse photo of Makoshika's night sky.

MATT LONG

Spin on in to a park

Montana state parks are staging events, lectures, and celebrations all summer. A sample:

BARD IN THE BADLANDS

Makoshika State Park, various times and dates. Don't miss the performance by Shakespeare in the Park in the Makoshika amphitheater on July 7. A youth program runs all summer on Thursday mornings at 9:30, and the Summer Campfire Program takes place Thursday nights at 7 p.m. from June 7 to July 26.

In addition to an interpretive center, dinosaur bones, and eerie rock formations, Makoshika State Park has opportunities for hiking, camping, disc golfing, and picnicking. Call (406) 377-6256.

ANCIENT HIGHWAYS, NATIVE BYWAYS

Salmon Lake State Park, Saturday evenings, June 9–August 18, 8 p.m. This popular lecture explores the history of western Montana's modern transportation corridors, which began as animal trails, Native American travel routes, or commercial roads. Call (406) 677-6804.

MAMMOTH HUNT

Ulm Pishkun State Park, July 21, 9 a.m.–5 p.m. Take part in the 19th Annual Montana Atlatl Mammoth Hunt. The atlatl is a 10,000-year-old weapon that predates the bow and arrow. Instruction by members of the World Atlatl Association. Competition in youth, men's, and women's categories. Call (406) 866-2217.

CROW INDIAN STORYTELLING

Chief Plenty Coups State Park, Thursday evenings at 7 p.m., throughout the summer. Join in a wonderful evening of storytelling presented at the home of this great Crow chief. Learn about the rich heritage of the Crow people through accounts told by local storytellers. Call (406) 252-1289.

Crow storytelling

BERT GILDART

UNDERGROUND LECTURES

Lewis & Clark Caverns State Park, Wednesday and Friday evenings, July–August. Montana's famous caverns look better than ever with new lighting in the Paradise Room. Lecture programs range from outdoor photography to stargazing to the history of local Chinese immigrants. Call (406) 287-3541.

Bannack Days

MONTANA FWP

BANNACK DAYS

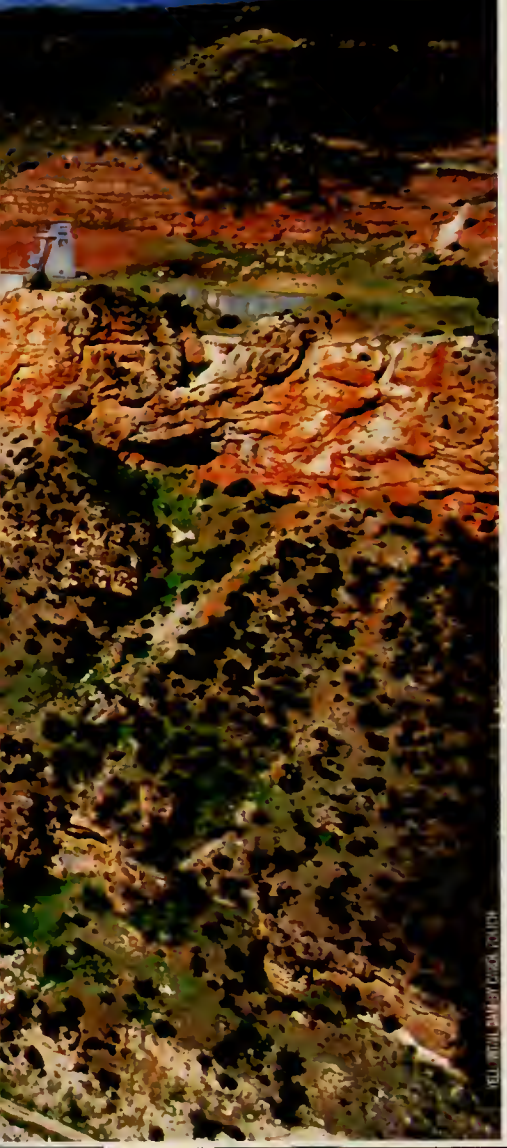
Bannack State Park, weekend of July 21–22. As always, this will be a great summer event celebrating Montana's early gold rush days. Learn old-time crafts, pan for gold, watch a bank robbery, shoot a black-powder rifle, and hand-dip your own souvenir candles. Great for families. Call (406) 834-3413.

FORT OWEN HISTORY DAY

Fort Owen State Park, Saturday, July 21, 10 a.m.–4 p.m. Come to the beautiful Bitterroot Valley to learn about Montana's first permanent white settlement. On July 30, starting at 8:30 p.m., take part in the Walk by the Light of the Moon Program in cooperation with the Bitterroot National Forest. Call (406) 542-5500.

For a complete list of events statewide, visit the state parks events calendar at fwp.mt.gov.

BATTLE ON THE BIGHORN



Montana state and federal officials were outraged when the Bureau of Reclamation (BOR) announced, on April 9, it would restrict water flows from Yellowtail Dam to levels substantially below what the federal agency had agreed to just three weeks earlier. Though reduced dam releases will mean more water in Bighorn Lake for boaters in Wyoming, low flows below the dam will harm the trout population on the Bighorn River downstream in Montana. "We are particularly frustrated by the Bureau's lack of accountability to the public," wrote Montana Senators Max Baucus and Jon Tester, Representative Dennis Rehberg, and Governor Brian Schweitzer in a joint letter

HOLDING BACK WATER FOR BIGHORN LAKE RECREATION COULD DOOM THE WORLD-CLASS TROUT FISHERY DOWNSTREAM

BY BRIAN MAFFLY

to BOR commissioner Robert Johnson. The Montana officials called the reverse decision "a complete surprise" and "a wholesale disregard for traditional federal agency–state channels of communication."

The controversy centers on the Yellowtail Dam, a 525-foot-high concrete plug built at the mouth of Bighorn Canyon by the BOR in the mid-1960s to create hydropower, irrigation water, and flood control. As it turned out, however, a major economic benefit of the dam, 40 miles south of Hardin, was to produce a world-renowned trout fishery. Rainbow and brown trout thrive in the consistently cool, clear water released from the dam's base. Rich in calcium from the limestone mountains where it originates, the water supports a thick stew of freshwater insects and other aquatic life that fatten trout. "It's essentially a huge spring creek," says Ken Frazer, the Montana Fish, Wildlife & Parks biologist who works on the river. During the late 1990s, the Bighorn River trout fishery below the dam was one of the most productive 20-mile stretches of trout river in North America. Up to 11,000 catchable rainbow and brown trout per mile crowded the river's braided channels, drawing anglers from around the world who spent an average of $13 million in the area each year.

The Bighorn's trout fishing industry has suffered during the past eight years of drought. With less water flowing into Bighorn Lake from rain and snowmelt in Wyoming, the

BOR has reduced dam releases. That means less water downstream for river side channels, habitat that is crucial for trout spawning and especially young trout survival.

Making the problem even worse are upstream interests—supported by Wyoming state and federal officials—lobbying the BOR to keep more of the Bighorn's water behind the dam. Those 1.5 million cubic yards of concrete form the 55-mile lake, part of a national recreation area straddling the Montana–Wyoming state line, which is vital to the economy of Lovell, Wyoming. The town suffered a financial blow when the reservoir was created, drowning 30,000 acres of productive farmlands. Over the past few decades, Lovell has tried to offset its lost agricultural base by becoming a haven for pleasure boating and lake fishing. But tourist traffic has been far lower than expected—or promised, as Lovell community leaders contend. With drought-induced lake levels too low for boats to reach an important boat ramp at Horseshoe Bend, Lovell boosters have insisted that the BOR reduce water releases. "We gave up things. We want some things in return," says Representative Elaine Harvey, a Wyoming state lawmaker representing the Lovell area.

Brian Maffly is a freelance writer in Bozeman.

Montanans argue that it's not fair to prevent the water from flowing downstream. "You can't shut down an existing multimillion-dollar river trout fishing industry based on a pipe dream of turning Bighorn Lake into a national fishing or power boating destination," says Matt McMeans, one of 49 trout fishing outfitters working the Bighorn River.

FWP biologists maintain that for the trout fishery to stay strong, the dam must release at least 2,500 cubic feet per second (cfs). Lake supporters in Wyoming say they need the lake's surface elevation to be at least 3,615 feet above sea level in order to launch boats from the ramp at Horseshoe Bend, a silt-plagued marina near Lovell. In the past, when rain and snow were more abundant, both states had the water they needed.

On March 21, at a meeting of groups representing both sides of the issue, the BOR announced its "final" proposal to release 2,000 cfs from May through October. Though less than what Montana had requested, FWP agreed to the flow as a compromise. At the meeting, the BOR said the flow would keep lake levels high enough to launch boats for the recreation season. Yet sometime during the following three weeks, the agency changed its mind and retained flows at 1,500 cfs. Says Frazer: "A flow of 1,500 cfs will devastate this year's trout production."

Montana officials are especially disappointed by the surprise decision because they have sympathized with Wyoming's stake in the lake and sought to collaborate on a solution benefitting as many people as possible. "We don't see the

NOWHERE TO GO WHEN IT'S LOW The Bighorn River's extraordinary trout population declines when water releases from Yellowtail Dam fall below 2,500 cubic feet per second (below and below right). This past spring, the Bureau of Reclamation agreed to a 2,000 cfs flow from May through October but reversed its decision three weeks later and released only 1,500 cfs. Montana biologists say low flows force small trout from side channels into the main channel, where they are eaten by larger trout. Far right: One of Montana's top trout waters, the Bighorn has seen fishing pressure drop substantially in recent years due to low water.

issue as Wyoming's water versus Montana's water. We all rely on the water, and we all need to work together to manage it," says FWP regional fisheries manager Jim Darling. "We need to take a basinwide approach to managing water in the Bighorn system and stop pitting lake users against river users."

Like other Bighorn outfitters, McMeans says he's made sacrifices for Wyoming users. His Bighorn Country Outfitters employs seven guides and serves 600 to 700 visitors a year. He says that even though the river still supports a healthy population of 3,000 to 4,000 trout per mile—with a high proportion of large fish—business has declined 30 percent in recent years due to bad publicity about low water. As Montana conceded to lowered flows from Yellowtail Dam, Bighorn River use has dropped from a peak of 125,000 angler days in the late 1990s to roughly 70,000, according to FWP.

Known as a dam tailwater fishery, the Bighorn runs clear during spring runoff and remains ice-free during the winter, making it ideal for supporting an outfitting industry. (Undammed rivers such as the Yellowstone muddy up in late spring due to mountain runoff and then freeze in winter.) McMeans says he can stay busy from mid-March through Thanksgiving without worrying about snowmelt or thunderstorms rendering the river unfishable. He and his wife, Keri, also owners of the Kingfisher Lodge, are emblematic of New West economies now found in out-of-the-way places like Fort Smith, Montana, a community of roughly 130 residents that owes its existence to Yellowtail Dam.

The Bighorn is among Montana's most heavily fished rivers, with nearly two-thirds of the pressure coming from nonresidents. One survey found that anglers representing 49 states and 11 countries had visited the river over a two-year period. Those anglers will go elsewhere if river levels get too low and the trout population can't sustain itself. Frazer says flows of 1,500 cfs dry up side channels, pushing smaller trout into the main channel, where they become meals for the river's famous lunkers. As a result, small trout die young, while the big trout get bigger—then die of old age. With not enough small fish to replace the older ones, it's only a matter of time before the trout population crashes, Frazer explains.

One hundred miles to the south, Wyoming's Lovell has its own problems. In the mid-1960s, Lovell had a thriving Main Street with five restaurants, eight gas stations, and three hardware stores. Today, like so many farming-based communities, Lovell supports just a handful of shops. Though the town's demise can't be blamed entirely on the rising waters that drowned out much of the surrounding farmland, Representative Harvey says the dam cost the county 240 farm-related jobs and, in today's dollars, $212,000 in annual property taxes.

Dam boosters won the county's support with rosy predictions of a water recreation–based economy. Some speculated that as many as two million boaters would use Bighorn Lake each year, generating millions of dollars in annual revenues for the town. Actual visitation has been much lower. Recreational use of the Bighorn Canyon National Recreation Area peaked in the early 1980s at 481,000 visitors per year and has since fallen to fewer than 200,000, according to the National Park Service (NPS). Approximately one-third of the boaters use the south end of the lake, near Lovell. The rest head to the dam at Fort Smith and either launch at Ok-A-Beh Marina or put in at the river and head downstream. Wyoming interests say the lake needs to be at a level where potential boaters know in advance they will be able to

BARRY & CATHY BECK

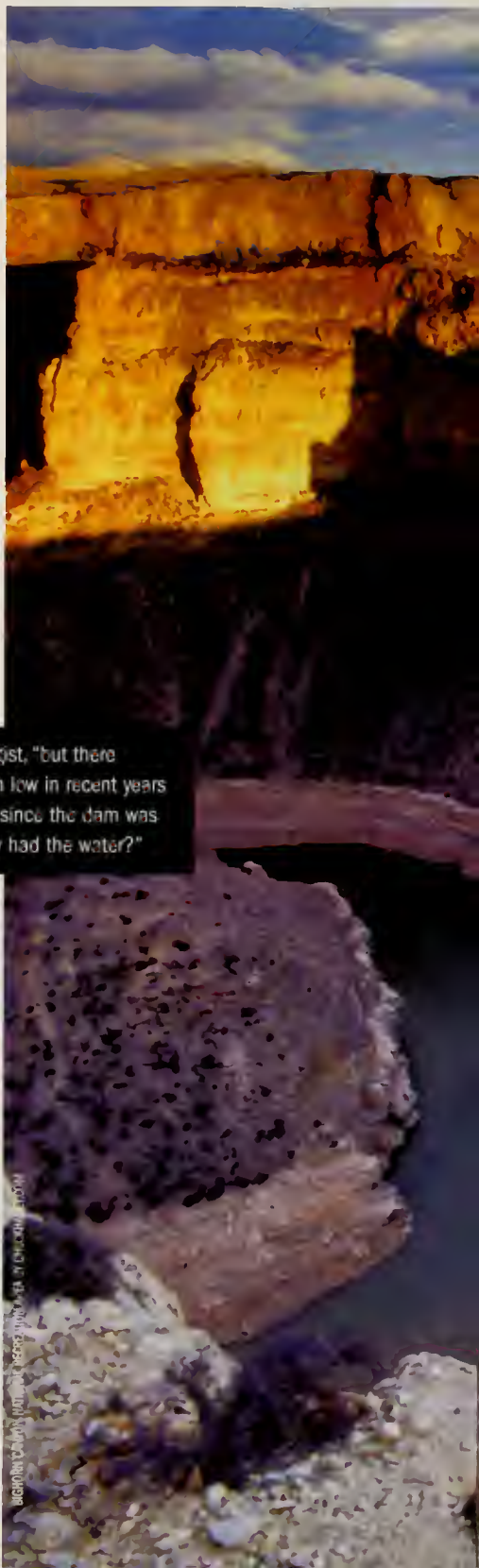
launch at Horseshoe Bend, one of two access points for the Wyoming side of the lake.

Yet even if boat ramps are covered by water, they may also be covered with too much silt to be usable. Washing in from the surrounding countryside, soil that previously flushed down the Bighorn River now fills the reservoir at a rate of 4,000 tons a day. The sediment is up to 50 feet deep at Horseshoe Bend. Long before the drought began lowering water levels, NPS officials were predicting the demise of the Horseshoe Bend marina due to increased siltation. The boat ramp there has been unusable since 2001 (except for the 2005 recreation season). The area could be dredged, but the costly process would have to be ongoing.

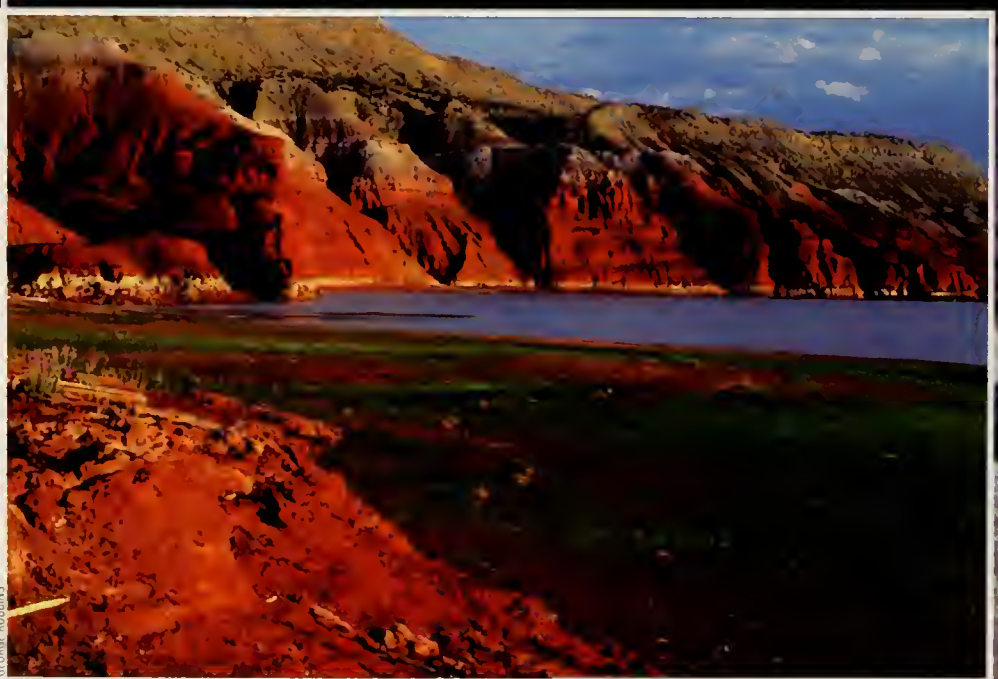
Montana interests point out that boaters wishing to use the south end of Bighorn Lake during low water can do so at Barry's Landing, just 12 miles north of Horseshoe Bend. "The park service has extended the boat ramp there, and the area also has better fishing," says Frazer. Lovell supporters say Barry's Landing lacks the recreational amenities found at Horseshoe Bend, such as a marina and swimming beach.

In 2006, after low water again put the Horseshoe Bend ramp in a sea of muck, Lovell's civic leaders formed the Friends of Bighorn Lake. They got help from Wyoming state officials and hired a Missoula-based consultant to assemble a study making an economic case for protecting lake recreation. A meeting was convened in Lovell's fire hall in August 2006, where the Lovell folks vented their frustration to BOR water managers. Outside in the street, signs propped against cars read: "Keep Wyoming Water in Wyoming." Inside, lake boosters demanded that outflows be cut to 1,000 cfs. "That got my blood up," says Doug Haacke, a Billings angler and member of the recently formed Friends of the Bighorn River, who attended the meeting. "Lovell was well prepared. Montanans were completely outgunned. I was surprised they would do something like that without talking to their neighbor. Montana anglers were late to wake up to the threat. We thought: Why would someone destroy a blue-ribbon trout fishery to protect boating on Bighorn Lake?"

Senator Baucus soon stepped into the fray and sponsored the Bighorn River Protection Act, which would set preferred outflows at 2,500 cfs and an absolute floor at 1,500 cfs during emergencies. It is unclear whether the federal legislation will pass, but Montana made its point. This past March, the BOR announced that due to higher-than-expected snowpack levels, it would increase the Yellowtail outflow to 2,000 cfs from May until the fall. Members of Friends of Bighorn Lake responded by say-



NO LAKE POWELL "I agree the reservoir is a wonderful place people should visit," says Ken Frazer, FWP biologist, "but there aren't enough people who will drive to Lovell, with a boat, to develop it into a big recreational facility." Though low in recent years (below), the reservoir has been at or above the 3,615-foot elevation during the summer for most of the time since the dam was built in 1967. Says Frazer: "If Wyoming wanted to make it a recreational area, why didn't they do it when they had the water?"

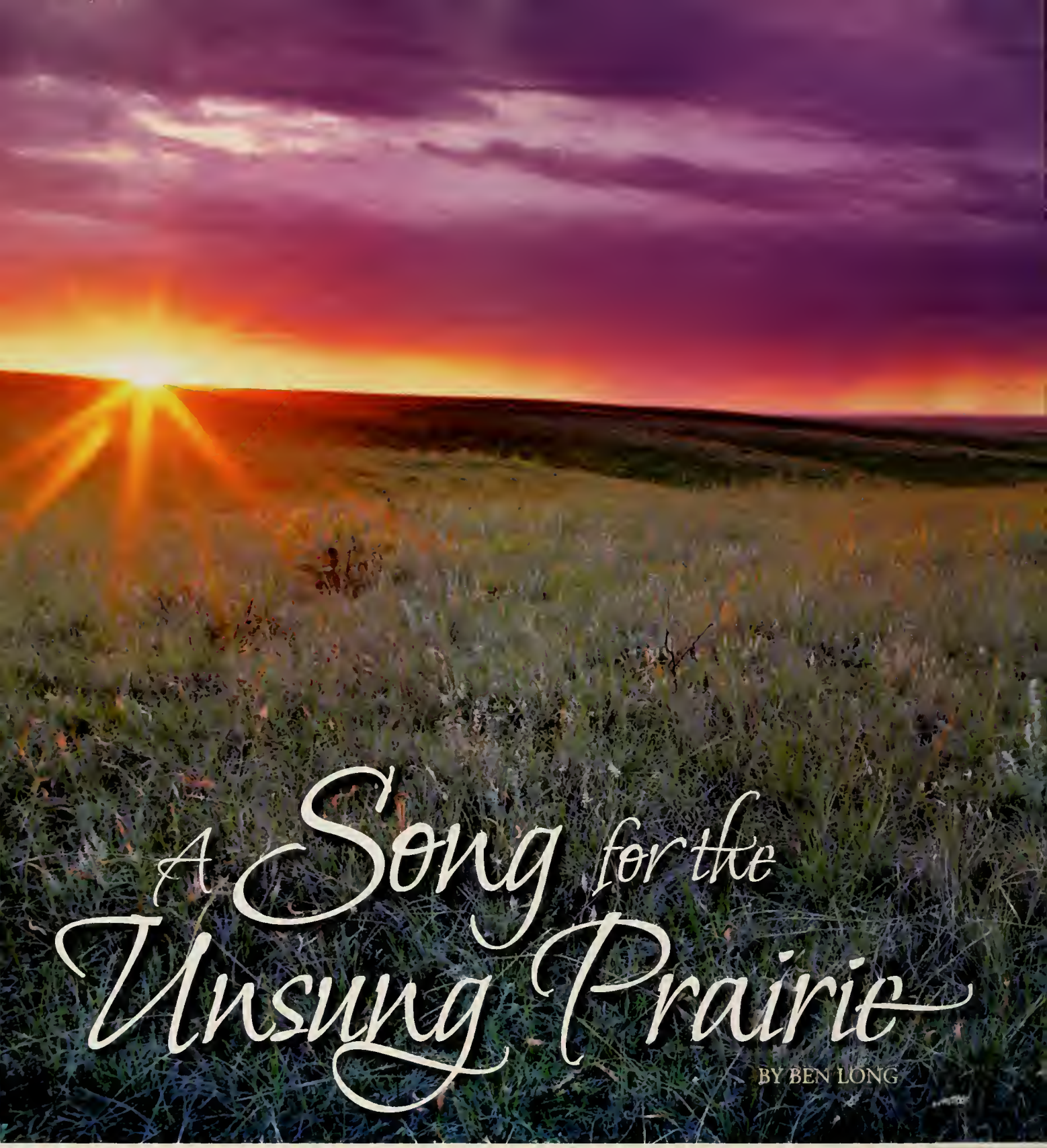


GEORGE ROBBINS

ing they would contest the 2,000 cfs release schedule. "They will just drain the lake again like they did last year," said group co-founder Keith Grant. Apparently the group succeeded in getting the BOR to change its mind.

Montanans vow to fight back, noting their strong economic and personal ties to the Bighorn. "Three of my friends' ashes are in the river, and I'll be there too someday," says longtime outfitter Michael Mastrangelo. In the meantime, he and other Bighorn supporters say that if it doesn't get the water it deserves, the famous trout fishery and the economy it supports could soon be left high and dry.

As Montana Outdoors *went to press, Yellowtail Dam was still releasing 1,500 cfs. FWP biologist Ken Frazer says department officials have met several times with the BOR: "They told us that if we get normal levels of precipitation, they might increase flows to 2,000 cfs from June through the fall brown trout spawn and into next spring."*



A Song for the Unsung Prairie

BY BEN LONG

Sometimes affection blooms in surprising places. I trace my fondness for the Montana prairie, for example, to childhood tedium—a bored boy in the back seat of an overheated Travelall rolling down I-90.

"How much farther?" I whined. Dad handed me a notepad and suggested I count pronghorns to pass the time. As I tallied, I noticed other creatures: a coyote pacing along a fence line, a golden eagle dipping below the horizon, a bull snake sunning itself on the shoulder. They sparked a slow burn in my imagination.

Montana's mountains get the glory, the calendars, the postcards, the national parks, even the state's name. But the prettiest girl at the dance ain't necessarily the one you want to marry.

Larry McMurtry wrote: "To those not attuned to their subtleties, the plains are merely monotonous emptiness. But to those who love them, the plains are endlessly fascinating, a place where the constant interplay of land and sky is always dramatic; gloomy sometimes, but more often uplifting."

There is a better way to learn the prairie than by speeding past in a vehicle. Walk into the dusk with a sleeping bag. Kick a spot free of dried cow flops and prickly pear. Stretch out and stare into the stars. Fall asleep amidst it all. Wake up with the dawn.

Some skittish creature will be on the move at daybreak. Then sunlight will ripple across the texture of the land, revealing coulees, draws, sills, folds, breaks, washes. Every clump of bunch-

grass will stand distinct in its own shadow. Even if you don't fall in love with it, you'll never think of the prairie as "flatlands" again.

In the prairie, you can hold time in your hand and blow off the dust. Old homesteads stand like tombstones to broken dreams. Bison bones date to nomadic days when dogs, not horses, were the beasts of burden. Pleistocene ice sheets rerouted the Missouri River from Hudson Bay to the Gulf of Mexico, leaving oxbow lakes where no river runs today. Fossils will take you even deeper in time, to the Cretaceous, when the belly of North America was under salt water and herds of duck-billed dinosaurs roamed the Montana coastline.

During the Ice Age, North American cheetahs challenged

ancestral pronghorns to what was perhaps the fastest foot race ever. Pronghorns are the prairie champion, far more native than, say, bison. These days we take pronghorns for granted, but a century ago they were an endangered species. Thanks to modern wildlife management, eastern Montana produces more pronghorns, harvested in a sustainable fashion every year, than existed in the whole world a century ago—though even today's plenitude is a fraction of what Lewis and Clark encountered.

Other prairie creatures are ghostly rumors. I should live long enough to spy a swift fox or a black-footed ferret. Meanwhile, I will be satisfied with the occasional bobcat.

The prairie exacts a price for its rewards. July's ball-peen ham-

mer sun is one. And winter! Hi-Line cattle, tails and ears stubbed by frostbite, carry the evidence all the way to the slaughterhouse.

In any season, a fierce prairie wind may topple an empty grain silo, or just drive you batty as you try to sleep in a flapping tent; and gumbo mud will turn any four-wheel-drive into a no-wheel-drive. A prairie rattlesnake probably won't kill you, but it will make you jump clear to next Thursday should the two of you plan a midday nap in the same patch of shade.

Then there's the prickly pear—so lovely in flower, so painful underfoot. Here's a tip if you plan to hunt on the prairie, which often requires crawling across the needle-sharp landscape: leather shoes, leather gloves, and kneepads like basketball players wear.

CHUCK HAHN

These luxuries allow you to spend evenings with a beer in your hand instead of a tweezers. Put the kneepads under your jeans so the locals don't think you're goofy.

In boyhood, I killed bucketsful of "gophers," but I no longer consider prairie dogs vermin. "Dog towns" are the prairie's supermarkets and apartment complexes. The burrows provide cool, shady hiding places for a host of other species, and prairie dogs themselves are on the shopping lists of predators, both four-footed and winged.

The prairie glamour birds are the white pelicans and the sandhill cranes flying almost imperceptibly high as they migrate between distant water bodies, and the long-billed curlews, singing as they descend. Sharp-tailed grouse, their habitat virtually gone

in western Montana, are still abundant east of the Divide.

Hard-core bird watchers will drive hours to catch sight of Sprague's pipits, Baird's sparrows, chestnut-collared longspurs, or piping plovers. On my list of prairie birds, I am especially fond of the common lark bunting, patterned like a miniaturized magpie. I envy the grace and speed of avian hunters: the kestrel and prairie falcon; ferruginous hawk, in Latin called Buteo regalis, *or "regal hawk"; and Swainson's hawk, which lives in constant summer, migrating between Montana and Argentina. The burrowing owl shares old burrows with badgers and ferrets. When cornered, the tiny owl buzzes like a rattlesnake to deter predators from following it underground.*

LESTER A. KISH

Prairie people are friendly—by nature and necessity. Towns and homes cluster like cottonwood galleries along the Yellowstone, Missouri, and Milk rivers or along the Hi-Line. In between lies precious little but precious little.

For the first time in history, most of humanity lives in cities. Billions of people will never gaze into a prairie night, never feel their hair tousled by a clean prairie wind, never see pronghorns flush across the land like flocks of low-flying birds. Today, an unbroken horizon is a rare commodity.

How much farther? A little ways yet. Just a bit more.

—Ben Long is a freelance writer in Kalispell.

THE HIGH PRICE

PAYING FOR THE PUMP West-central Wyoming's Pinedale Anticline, a 200,000-acre upwelling of rock layers rich in natural gas, bears the scars of intense energy development. Says one FWP official who visited the area last fall, "Believe me, we don't want Montana to come to that."

OF GAS

Will fish, wildlife, and scenery bear the cost of Montana's growing natural gas development?

BY TOM DICKSON

You would think Art Hayes, Jr. would want the extra water. His 9,000-acre ranch, along the Tongue River in southern Rosebud County, receives just over a foot of precipitation each year. Every summer the 63-year-old rancher, whose family has run cattle on this site since 1884, must divert water from the prairie river to irrigate his alfalfa fields. Farmers and ranchers downstream do the same. In this semi-arid region, which includes the Crow and Northern Cheyenne Indian reservations, water is the most precious natural resource.

Yet Hayes and other members of the Tongue River Water Users Association do not want the millions of gallons of water pumped from underground by the region's growing number of coal bed methane (CBM) wells. They maintain that the water, which traps the methane in coal seams and must be pumped to the surface to extract the natural gas, is polluted. »

WASTING WATER IN A BONE-DRY REGION One of the biggest questions with CBM drilling is what to do with the millions of gallons of excess water removed from underground aquifers each day. In the Powder River Basin, the water contains high levels of sodium bicarbonate salts that could damage crops, soil, and fish populations. Currently 2 million to 3 million gallons of untreated discharge water flows into Montana's portion of the Tongue River daily. Below, workers spray discharge water from a Wyoming well.

Over the past several years, 2 million to 3 million gallons of highly salinated discharge water has been legally pumped into the Tongue each day from nearly 800 CBM wells in Montana's portion of the methane-rich Powder River Basin. Hayes, president of the water users association, worries that high levels of sodium bicarbonate salts in the irrigation water will concentrate in the soil over time and damage his crops, as well as kill fish and other aquatic life in the river. "No one knows what effect this polluted water has on the soil and the river now," Hayes says, "and no one has any idea what the cumulative effects will be 30 years from now."

Soon thousands more rigs will be popping up in southeastern Montana and elsewhere in the state to extract natural gas, an increasingly popular energy source for heating homes, manufacturing goods, and generating electricity. The Bureau of Land Management, (BLM) which controls the mineral rights in most of the state, predicts that 16,000 CBM wells will be producing in southeastern Montana within the next two decades. Throughout Montana, the BLM is selling new leases on hundreds of thousands of acres each year. In recent months, leases have been offered on sage grouse nesting areas, near the Upper Missouri National Wild and Scenic River, and on the Beaverhead River, a nationally renowned blue-ribbon trout stream.

> **"We don't understand the need to drill before first taking all the steps necessary to protect Montana's fish and wildlife. The gas isn't going anywhere."**

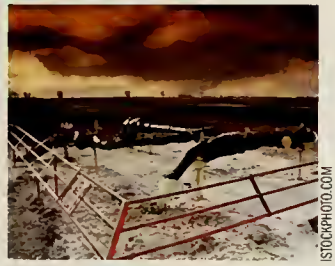
Growing natural gas development concerns Montana Fish, Wildlife & Parks officials, who keep a close watch on activities that could threaten the state's highly valued elk, trout, and other species. "We understand the need for energy development, but we don't understand the need to drill before taking all the steps necessary to protect Montana's fish and wildlife," says FWP director Jeff Hagener. "The gas isn't going anywhere."

The department recently protested BLM plans to sell oil and gas leases in some parts of Montana containing critical wildlife habitat. Hagener says the department may challenge future sales unless the BLM and the gas industry find ways to reduce disturbances to fish and wildlife—especially sage grouse, which have been petitioned for listing under the Endangered Species Act. FWP has no permitting authority for gas drilling, but it can and should "raise red flags when we believe there could be a significant threat to fish and wildlife, which are major recreational and economic assets to this state," says Hagener. With more than 4 million acres currently leased for oil and gas exploration and extraction, and more being sold each year, Hagener and other FWP officials say some parts of the state could be in danger of winding up like Montana's neighbor to the south.

Tom Dickson is editor of Montana Outdoors.

Not much drilling, for now

The Bureau of Land Management, which controls mineral rights in much of Montana, has sold mineral leases on more than 4 million acres statewide. Most of these leases do not contain producing wells. But changing technology and higher energy prices could make unprofitable leases worth developing. Though Montana contains far fewer producing wells than Wyoming or southern Alberta, the number here is expected to rapidly increase. The BLM estimates that 16,000 new coal bed methane wells will be drilled in southeastern Montana alone over the next two decades.



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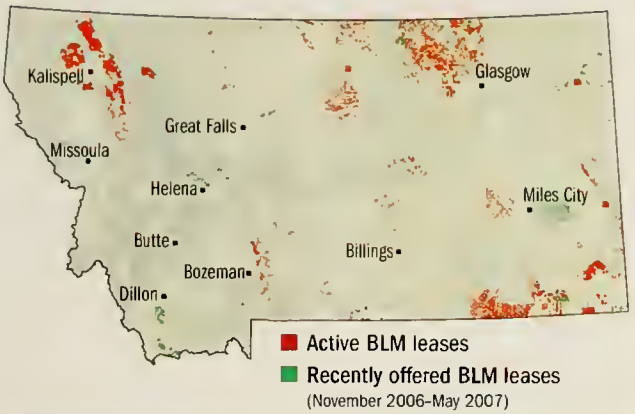

SCOTT STORY/MONTANA FWP

SOURCES: BUREAU OF LAND MANAGEMENT; MONTANA BOARD OF OIL AND GAS

FACT-FINDING MISSION

Though its snowy mountains, national parks, and vast pronghorn-rich prairies make Wyoming much like Montana, the state has a far less cautious approach to energy development. That has translated into huge profits for energy companies and enormous wealth for Wyoming from oil and gas royalties. It has also damaged the landscape and harmed wildlife. Those effects have been most severe on the 200,000-acre Pinedale Anticline, an upwelling of rock layers rich in natural gas 60 miles southeast of Grand Teton National Park. Last fall, FWP officials drove to Pinedale to see firsthand what 350 deep gas well pads had done to the landscape. The industrialized sites, each the size of four football fields, are filled with rigs, power lines, compressor stations, and pipelines and connected by a web of roads cutting across the prairie. "Believe me," says Larry Peterman, FWP chief of operations, "we don't want Montana to come to that. We were shocked. Each of those well pads looked like a small town."

Peterman says the sound of electrical generators, diesel engines, and processing stations churned across the landscape 24 hours a day. Massive trucks rumbled along newly graded dirt roads, raising clouds of dust in what he describes as an "industrialized landscape." FWP officials also visited intensified drilling developments in southern Alberta, where more than 12,000 shallow gas wells have been drilled in the past three years, and on the Parachute Ranch in west-central Colorado.

Gas development on such a scale is no friend to fish and wildlife. Erosion from new roads sends silt into streams, where it smothers fish eggs. Torrents of wastewater from CBM sites can erode riverbanks. Undiluted discharge water has been shown to kill native minnows. "There are so many unknowns," says Brad Schmitz, FWP regional fisheries manager at Miles City. "What if current [water protection] standards aren't strict enough? If you lose an aquatic system like the Tongue River, you'll never get it back the way it was."

Some of the worst disruption to wildlife comes from new roads that fragment habitat

Three Types of Gas Wells

COAL BED METHANE

How it works: Also called coal bed natural gas, CBM wells extract methane trapped by water pressure in underground coal seams by removing the water and then the gas.

Where they are: Primarily in the Powder River Basin of southeastern Montana.

FWP concerns: Wastewater harming river environments, aquifer depletion drying up springs, wildlife disturbance and habitat fragmentation from roads and infrastructure such as power lines, pipelines, and compressor stations.

SHALLOW GAS

How it works: Shallow gas wells tap natural gas reserves 1,500 feet or less underground. Initial wells are relatively inexpensive and can be installed in just a few weeks.

Where they are: Thousands of wells now exist north of the Hi-Line between Shelby and Malta. Tens of thousands are in southern Alberta just north of the Montana border.

FWP concerns: Habitat fragmentation from roads and infrastructure such as power lines, pipelines, and compressor stations.

DEEP GAS

How it works: Deep gas wells extract natural gas 10,000 to 15,000 feet underground. Initial wells are expensive, difficult to drill, and require up to four months to install.

Where they are: Currently there are none in Montana, though the Rocky Mountain Front has been targeted for deep gas wells, and BLM leases are being sold for deep gas drilling in southwestern Montana. Major reserves are in Wyoming and Alberta.

FWP concerns: Large well pad footprints (4 acres each) as well as habitat fragmentation from roads and infrastructure such as power lines, pipelines, and compressor stations.

A CBM well in Wyoming.

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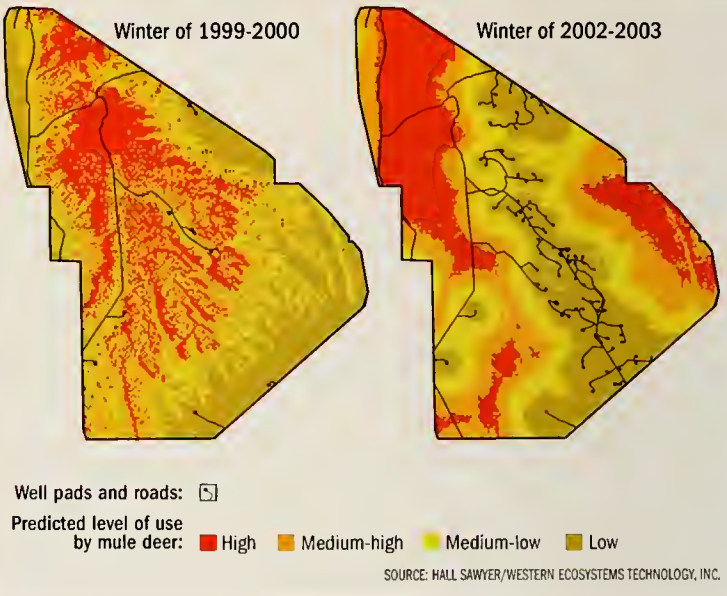
DONALDMJONES.COM

MASSIVE SPREAD A recent study funded by the gas industry and conducted in cooperation with Wyoming agencies tracked mule deer movement in Wyoming's Pinedale area as gas drilling and exploration expanded across the landscape. Though direct habitat loss from development was small, the presence of roads and pads displaced deer, pushing them to the fringes of their habitat. Hall Sawyer, study coordinator, found that mule deer numbers in the Pinedale area declined by 46 percent from 2001 to 2005, from 5,228 to 2,818. "Considering how much energy development is going on," he says, "it's amazing how little information has been gathered on the impacts of drilling to wildlife."



SOURCE: HALL SAWYER/WESTERN ECOSYSTEMS TECHNOLOGY, INC.

into pieces too small for animal use. Recent research at the Pinedale Anticline shows that gas drilling drove mule deer away from essential winter habitat and led to a 46 percent population decline from 2001 to 2005. Another study shows that pronghorn shun all developed areas of Wyoming's Upper Green River Basin. In other heavily developed areas, populations of grassland birds such as sage sparrows and Brewer's sparrows have plummeted. And Russian thistle and other exotic plant species carried by trucks and equipment from other states are crowding out native forage needed by wildlife.

Worst hit are sage grouse. David Naugle of the University of Montana recently finished studies on the large prairie birds in the Powder River Basin, about 80 percent of which is in northeastern Wyoming and 20 percent in southeastern Montana. The basin now holds more than 30,000 CBM wells, 97 percent of them in Wyoming. Naugle and his associates found that sage grouse populations declined by 86 percent from 2000 to 2005 in developed areas. The main causes, says Naugle, were roads, construction, noise, and traffic scaring the birds off historic mating grounds. Naugle also found that gas development drives sage grouse from high-quality winter range, where the birds must feed heavily on sagebrush leaves to survive. In another research project, a University of Wyoming scientist concluded that if the rate of decline he documented in the Pinedale area continues, his study population of 1,200 sage grouse will disappear within 20 years.

> "Montana is sandwiched between Wyoming and Alberta, which have some of the most intense, high-impact gas drilling in North America."

Such reports worry hunters and conservationists. They should also concern anyone who uses public lands. "If this drilling starts impacting habitat for sage grouse and mountain plovers, and then those species are federally listed [as endangered species], you could see severe cutbacks on grazing, recreation, and other public land uses," says Hagener.

As native wildlife in drilling areas has declined, human habitation has increased, often to the detriment of local communities. In Wyoming's Sublette County, population 7,000, nearly 3,000 roughnecks have come to work in the boomtown economy since 2000. Most are men in their 20s and 30s living in company-built "man camps." Violent crime and drug use has escalated. According to a recent county report, arrests during the past six years increased by nearly 300 percent, and crystal meth arrests more than quadrupled from 2004 to 2005.

THE SANDWICHED STATE

Industry representatives say it's misleading to use Wyoming to predict what might happen in Montana. "The geology is completely dif-

DIANE HARGREAVES

A BUST FOR BOOMERS Sage grouse numbers have increased recently in parts of Wyoming and Montana, but not in areas of gas development. In a study funded by industry and Wyoming and federal agencies, University of Montana research scientist David Naugle found that the sage grouse population declined by 86 percent over five years in developed areas of the Powder River Basin. In a University of Wyoming study, the lead researcher concluded that his study population of 1,200 sage grouse could disappear in 20 years. The scientists say noise, traffic, and other disturbances are driving the birds away from historic spring booming grounds and winter sagebrush habitat.

ferent," says Dave Galt, executive director of the Montana Petroleum Association. BLM officials agree, noting that they expect only six gas wells to be drilled in all of Beaverhead County. The agency also maintains that existing state and federal regulations adequately protect Montana's fish and wildlife from projected increases in energy development.

Conservation groups are skeptical. "Montana is sandwiched between Wyoming and Alberta, which have some of the most intense, high-impact gas drilling in North America," says Bruce Farling, executive director of Montana Trout Unlimited. "BLM projections on drilling near Dillon don't account for future technologies, evolving information about deposits, or changing economics. It's hard for me to find comfort in their claims that we have nothing to worry about when they promote exploration next to a nationally acclaimed treasure like the Beaverhead River."

Another concern conservationists and ranchers share are "split estate" laws. Landowners usually don't own subsurface rights to their property. The federal government does, and it can sell those rights as leases. "Mineral leases convey a property right," says Steve Belinda, who spent 16 years as a wildlife biologist with the BLM and now works in Pinedale for the Theodore Roosevelt Conservation Partnership, a hunting and conservation advocacy organization. "If a company owns a lease and can't work something out with the property owner, it can still go in and drill." That's even true for property in conservation easements, which FWP and land preservation groups buy to protect critical wildlife habitat from subdivision and other development.

The gas industry says it is working to lessen harm to the landscape and wildlife. According to Galt, energy companies in the Powder River Basin have begun building narrower roads and burying power lines. "The industry has done a lot of analysis, and there's been a lot of data gathered from scientists," he says. The BLM requires companies to replace or restore damaged wildlife habitat and make site-specific development

PATRICK RUMMANS

FWP calls for a "new model" of energy development

FWP officials acknowledge that energy development will and should continue to grow in Montana. But to ensure that wildlife and fish are not put at risk, the department and conservation groups are calling for a "new model" of energy development and production.

Currently, intensive natural gas drilling can occur all at once across a landscape, disrupting wildlife populations and damaging wildlife habitat. Under the new model, which would control the geographic scope and rate of gas development expansion, Montana would:

- Make critical habitats for key species such as sage grouse and mule deer off-limits to drilling.
- Require incremental development so that gas drilling would be concentrated in one area at a time.
- Apply stipulations to leases and drilling permits. (Also known as "best management practices," the stipulations would set standards of well spacing, power line location, road width, and other development to reduce disturbance and damage to wildlife and habitat. They would also require developers to begin restoring habitat as soon as natural gas was extracted from a site.)
- Require developers to submit habitat mitigation funds and restoration plans for a site before drilling could begin.
- Monitor wildlife populations during the development to determine if the best management practices were working or needed to be adjusted.

"This is a step-by-step process that makes sure Montana avoids the boom-and-bust approach we're seeing in Wyoming and elsewhere," says FWP director Jeff Hagener. "It allows the state and industry to learn which mitigation practices work and which don't, so we can continue improving as we go along." Hagener says he firmly believes Montana can develop energy and protect fish and wildlife at the same time: "We've begun working with all interested parties to develop and, I hope, carry out a new approach to energy development that recognizes and protects Montana's fish, wildlife, and recreational resources." ■

BURNING ISSUE FWP officials and most conservationists acknowledge the necessity and inevitability of energy development in Montana. But they believe gas drilling should not be allowed to damage fish and wildlife habitat. Says one Kalispell hunter, "Montana doesn't need to be the boiler room for Las Vegas and Los Angeles. Destroying some of the best wildlife anywhere is not only a waste, it's a pointless, needless waste."

modifications to reduce environmental damage. Recently, a gas company operating in Montana announced it had applied for state permits to reinject CBM discharge water back into the ground. Reinjection became more interesting to many companies after 2005, when the Montana Board of Environmental Review required that all new discharges into the Tongue River must be treated to meet minimum water quality standards.

Taking any additional measures to protect wildlife, say industry representatives, will cut into profits and state royalties and hamper efforts to hasten the country's energy independence. "We talk about reducing our dependency on foreign oil," says Galt, "but there's no reasonable solution without developing our own resources in this country."

Conservationists and FWP officials say efforts by gas companies and the BLM to mitigate the effects of drilling fall short of what is needed. For example, wells may be sited as close as one-quarter mile from sage grouse breeding areas, called leks, during mating season and 2 miles when the hens disperse and begin rearing their young. FWP is calling for a 1-mile buffer during mating season and a 4-mile buffer during chick rearing. According to Belinda, BLM requirements for habitat mitigation (replacement) often don't help species harmed by development. "There is some good mitigation and reclamation work," he says, "but a developer can destroy a sage grouse lek and then plant aspen trees 100 miles away." Belinda adds that when he worked for the BLM the agency "approved most requests for what are called 'exceptions,'" one-time waivers to federal restrictions intended to protect wildlife and other natural resources.

> **"It doesn't make sense to endanger the state's wealth aboveground while extracting the wealth from belowground."**

As for the country's energy independence, Farling of Trout Unlimited notes that even if all the natural gas in the entire Powder River Basin (roughly 25 trillion cubic feet) were extracted tomorrow, it would only supply the country's gas needs for slightly more than one year. "It's foolhardy to sacrifice, perhaps permanently, some of the nation's best fish and wildlife habitat for an unachievable energy objective," he says.

JUST SAY WHOA

Recently even Wyoming began having second thoughts about its approach to gas drilling. Alarmed by research showing steep declines in sage grouse and mule deer populations, Governor Dave Freudenthal has called for strengthening federal environmental regulations to protect wildlife habitat from energy development. In May he asked the U.S. Forest Service to delay new exploratory drilling in western Wyoming, which he said could be "the first domino" in the total industrialization of forest land in that state.

It won't be long before Montana sees its own escalation of gas well drilling. The installation of 16,000 new CBM wells in the state's portion of the Powder River Basin has been delayed only temporarily by a lawsuit brought by the Northern Plains Resource Council requiring the BLM to revise its initial environmental impact statement (EIS). "Once the [new] EIS is signed, rigs and crews now in Wyoming will move right up into Montana," Belinda says. Also troubling are lease locations. For example, recent tracts for sale near Monida Pass, just a few miles from the Red Rock Lakes National Wildlife Refuge, contain tributaries that hold native westslope cutthroat trout, a state species of concern.

Due to potential harm to critical fish and wildlife populations and habitat, FWP officials and conservation groups are saying "whoa" to new lease sales and advocating a new model of development (see box, page 27). Hagener points out that Montana has changed in recent years as citizens and state leaders increasingly recognize the relationship between healthy natural environments and healthy economies. He says that fish, wildlife, and scenery support the state's $2 billion tourism and hunting- and fishing-based industries. "We need to find ways to develop Montana's energy resources that don't pose a threat to our fish and wildlife," Hagener adds. "It doesn't make sense to endanger the state's wealth aboveground while extracting the wealth from belowground."

A Park Next Door

Urban state parks provide outdoor recreation and scenic beauty for city dwellers throughout Montana

The mention of "Montana parks" may conjure images of Flathead Lake's sparkling blue waters, Bannack's ghostly main street, or the eerie rock formations inside Lewis and Clark Caverns. But it probably doesn't call to mind an urban park, a place where a city dweller can paddle a canoe, take a stroll, look at birds, fly a model airplane, practice fly-casting, or take a swim. Urban parks are generally associated with major cities, like New York City's Central Park, not places you'd find here where the buffalo roam.

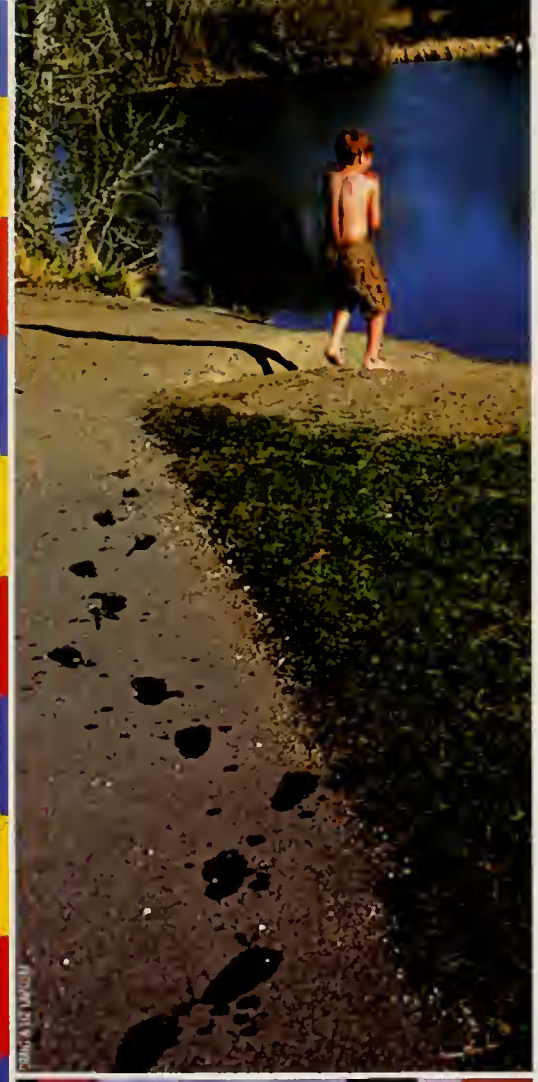
Yet even wild and woolly Montana has state parks in or near urban areas. The facilities are increasingly important as parts of Big Sky Country become more urbanized. As in other cities across the country, Montana's urban state parks provide places where residents can learn about local history and wildlife, hold family reunions and weddings, throw company picnics, stage sporting events, and more. "For many Montanans, urban parks have become an essential contribution to their quality of life," says Joe Maurier, Parks Division chief for Montana Fish, Wildlife & Parks.

Wild in the city

A sign on 24th Avenue in Billings shows the temperature at 92 degrees as I leave a deli carrying curried chicken sandwiches for me and my wife, who is waiting in the hot car. Our golden retriever, Zelda, is panting in the back seat. In under 20 minutes we're sitting in the shade of trees on the shore of Lake Elmo, still within the Billings city limits. A breeze carries the laughter and shouts of kids splashing and

BY SAM CURTIS

CANOEING AT FROG POND STATE PARK BY DEAN VOGEL



swimming from the sandy beach across the lake. Two anglers drift past in their small boat. After finishing our sandwiches, we take Zelda into the fenced "dog park" area, where she plays off leash and even takes a cooling swim.

Lake Elmo State Park's 126 acres are divided in half between land and water, offering a variety of recreational opportunities. A jogging and hiking trail rings the scenic lake, which FWP stocks with trout. The department also maintains the swimming beach and a playground. "And it's a great place to watch wildlife," says park manager Terri Walters. "Even though the park is surrounded by homes, people see ospreys, loons, pheasants, and deer—not to mention all types of songbirds and warblers."

Lake Elmo's visitors are predominantly locals, numbering up to 1,000 or more on hot summer weekends. "Our group pavilion is usually booked solid throughout the summer with reunions, company parties, and weddings," Walters says. "This is truly an urban park. It lets you get into a natural setting quickly, without having to travel too far or spend a lot of money on gas."

Great Falls residents can quickly reach **Giant Springs State Park**, just 4 miles from downtown. During the summer, primarily out-of-towners flock to the park's huge, natural spring, gushing water out of the earth at an astounding rate of 156 million gallons a day. "But nine months of the year most visitors are locals, many of them using trails in and around the park for walking, wildlife watching, biking, running, and in-line skating," says park manager Matthew Marcinek. "Many are regulars, people who come and park their car in the same place and take the same walk every day. A couple of times a week, I see the same lady wheelchairing with her dog along one 6-mile stretch of trail."

Trails within the stare park are part of the larger 30-mile River's Edge Trail System that forms a well-used route from downtown Great Falls along the Missouri River to a wild, prairie landscape that extends for several miles downstream of the park. "It's such a scenic, beauriful area along the river," says Doug Wicks, president of Recreational Trails, Inc., a nonprofit group that helps maintain, improve, and extend the trail sys-

Sam Curtis is a freelance writer in Bozeman.

tem. "We get people coming to hike with the grandkids, see the change of seasons, enjoy the solitude, take a walk, or just park and look at birds."

Bird watching is one of the great features of every Montana urban state park. On this early summer day at **Spring Meadow Lake**, on the outskirts of Helena, a cacophony of bird calls surrounds me as I amble along a trail winding through willows and red-osier dogwood that ring the spring-fed lake. I listen to the distinctive song of a killdeer and then see a yellow warbler flit among the leaves of a tree. Red-winged blackbirds fly to and from cattails in a nearby wetland, and great blue herons stalk the lake shallows in search of minnows. In this wild, green oasis, it's difficult to believe that the traffic and fast-food stores of Euclid Avenue are just a few blocks away. "It's quite a remarkable place," says Helena resident and bird expert George Holton, who has been visiting the site for half a century. "When I first came out here in the 1950s, it was just a gravel pit. But the recuperative power of nature is wonderful. What a beautiful park it is now. The state did a great job when it bought this property."

> "We get people coming to hike with the grandkids, see the change of seasons, enjoy the solitude, take a walk, or just park and look at birds."

The 56-acre site was originally a source of gravel used to rebuild Helena after a major fire devastated the downtown in 1928. When the gravel ran out, the mining operation closed down and the excavated areas filled with cold spring water. The landowner, who originally planned to develop the site for condominiums, sold it to the state in 1981. Now kids walk or cycle to the park from town to cool off in the lake or cast a line. "The fishing is really good, and that's a big draw for these urban parks," says park manager Craig Marr. "There are naturally reproducing largemouth bass in here, plus sunfish and perch, and we stock it each spring with rainbow trout."

Soon kids will have additional opportunities to learn about nature. Next to the state park sits FWP's Wildlife Rehabilitation Center, housed in the Stedman Foundry building, where orphaned bears are cared for before being returned to their natural habitats. At the historic building, FWP is developing a state-of-the-art wildlife education center that will contain wildlife exhibits, fish aquariums, and an outdoor amphitheater.

As Marr and I stroll along the trail, we pass a woman walking briskly in the other direction; we pass her again on the other side of the lake. "A lot of adults come here to get exercise in a natural setting, without leaving the city," Marr says. "But kids—they'd rather look for frogs and turtles."

Fond of their pond

Another converted gravel pit is **Frenchtown Pond State Park**, off I-90 about 15 miles northwest of Missoula. Frenchtown Pond typifies the diversity of recreational opportunities available at Montana's urban state parks. "We get a lot of moms with their little ones splashing in the water and enjoying the playground equipment," says Lee Bastian, regional park manager in Missoula.

SUMMER IN THE CITY Just because there are no skyscrapers doesn't mean these state parks aren't urban. Counterclockwise from upper left: Heading to a swimming hole at Spring Meadow Lake in Helena; fishing for trout at Lake Elmo in Billings; cycling over the world-famous spring at Giant Springs in Great Falls; kayak practice at Frenchtown Pond near Missoula.

"It's a safe place for them to go and not have to worry about the facility being too primitive or too far out in the woods."

A great place for kids to learn to fish, the pond is used by FWP for its annual Family Fishing Initiative Program. "We draw 3,000 kids to Frenchtown with that one program," Bastian says. "Kids catch their first little fish, and they're beaming from ear to ear. Some nice 3-pound bass are there, too."

Local sporting goods stores hold canoe and kayak demonstrations at the 20-acre spring-fed pond, and high school cross-country teams practice on the shoreline trail. On most summer weekends, members of church and civic organizations pack the group picnic shelters. The Big Sky Thunderbirds, a radio-controlled model airplane club, convenes a big event at the state park each year. U.S. Forest Service smokejumpers from Missoula train for water landings on the pond, and the annual Garden City Triathlon is held there each September. Bastian says the new park trail at Frenchtown Pond ties into AJ Memorial Trail, which residents created to link the park to the town of Frenchtown. "People want to make this a community park, an asset to their neighborhood," he says.

CITY ESCAPE Makoshika State Park in eastern Montana is considered an urban state park because it is partly within the Glendive city limits. Local families visit to learn about geology and dinosaurs, have a picnic, or take a bike ride on the park's quiet paved roads.

Community amenity

All state parks have their fans, but urban state parks seem to have the strongest devotees. According to Ken Soderberg, chief of the Parks Division's Interpretation Bureau, communities with a state park "take a lot of pride in that amenity," he says. "The park becomes part of the community's identity."

It also becomes an urban asset. According to the nonprofit Urban Institute, parks increase nearby property values, improve public health by providing places to exercise, and introduce kids to civic organizations that sponsor recreational activities.

In Montana, it's not always obvious what is or isn't an urban state park. For instance, **Makoshika State Park** might seem to be in the middle of nowhere, yet its visitor center is within the Glendive city limits, and some families live just a quarter mile away. "Residents in and around Glendive treasure this place as 'their' local park," says state park manager Ryan Sokoloski. "People walk into the park from town, or families bring their bikes and ride around, taking advantage of the paved roads, slow traffic, and beautiful scenery." The park holds community concerts in its natural amphitheater, and in summer the local Lutheran Church holds Sunday services there. Most weekends the amphitheater is reserved for weddings or family reunions. "If anything were to threaten this park, the people around here would be very upset," says Sokoloski.

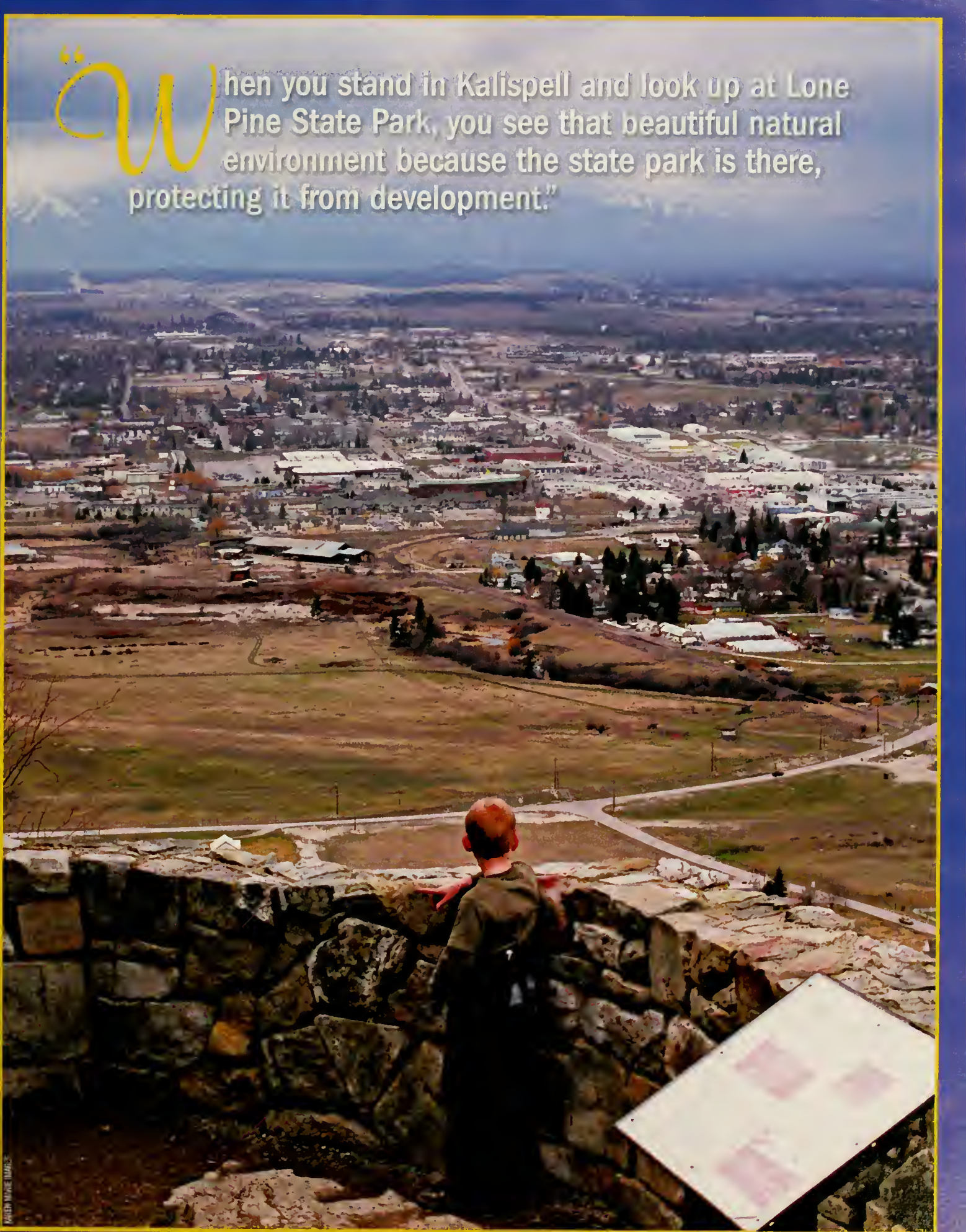
> "Families bring their bikes and ride around, taking advantage of the paved roads, slow traffic, and beautiful scenery."

Not everyone appreciates Montana's urban parks. "One of the challenges we constantly face is vandalism and inappropriate behavior," says John Little, regional parks manager in Miles City. Replacing shot-up signs and latrine doors eats away at a park's maintenance budget, and rowdy behavior scares away families. That was the situation at **Pirogue Island State Park**, a 300-acre island in the Yellowstone River near Miles City separated from the mainland by a channel. "We used to let people drive across to the island, but hooliganism became a problem," Little says. After FWP closed the island to vehicles, problems declined. "We got some complaints at first from people who'd grown used to driving there," Little says. "But some of them have since thanked us for creating a nice place for people to take walks, have picnics, and pick chokecherries."

With its big skies and counties the size of some European countries, Montana wouldn't seem like a state lacking in places to enjoy the outdoors. But a growing and increasingly urbanized population is changing that, especially in popular areas like the Flathead Valley. "As our population centers grow, having these urban parks where people have access to diverse recreational opportunities becomes more and more important," says Marty Watkins, recently retired regional park manager in Kalispell. She points out that **Whitefish Lake State Park**, though just 11 acres, offers one of only two public access sites on scenic Whitefish Lake, located on the outskirts of Whitefish. And **Lone Pine State Park**, which sits on a mountain overlooking Kalispell, has value not just as a place to visit, but as a place to view from afar. "When you stand in Kalispell and look up at Lone Pine State Park, you see that beautiful natural environment because the state park is there, protecting it from development," Watkins says. "The park provides benefits beyond being a place where people can hike on a trail system in a natural setting, or where school kids can learn about their regional environment."

Like other urban parks, Lone Pine not only provides essential outdoor recreational facilities and opportunities for people living nearby, it also adds beauty to the surrounding landscape. Whether they live in New York City or the city of Kalispell, that's something all urban dwellers can appreciate.

For more information on Montana's state parks, both urban and rural, visit the FWP website at fwp.mt.gov.


"When you stand in Kalispell and look up at Lone Pine State Park, you see that beautiful natural environment because the state park is there, protecting it from development."

BIG TENT Home construction on riverbanks not only threatens fish and wildlife habitat but also the structures themselves. River valleys may look safe and scenic when water is low, but raging spring floods are inevitable in a mountainous state like Montana. One University of Montana professor compares building in the floodplain to "setting up your tent on the highway when no cars are coming."

CHRISTOPHER BUTER/NEWREMAINIAL.COM

Too Close for Comfort?

As more people build homes along Montana's cherished rivers, citizens and communities debate how near the water those structures should be.

BY MARY VANDENBOSCH AND JEFF ERICKSON

In spring 1997, people who had built their dream homes on the banks of the Yellowstone River were having second thoughts. The river surged with torrents of mountain runoff that spilled over the banks. Expensive ranchland and home lots eroded into the brown cascade, which toppled mature cottonwoods and blew out famous spring creeks. "A barbeque, lawn furniture, and giant cottonwoods swept past, and then the house's deck fell into the river," recalls Mike Gurnett, Montana Fish, Wildlife & Parks film production supervisor, who took footage of the flood while one home's beleaguered owner watched helplessly nearby. "You think that changes in nature move at a glacial pace. But when you witness something like that, you can see how quickly it can change—in this case, literally overnight." »

That devastating flood and a similar one on the Yellowstone River in 1996 focused public attention on homes and other development along Montana's cherished rivers. Citizens and communities began discussing whether structures should be built near the water—and, if so, how close. The issue has come before the Montana Legislature several times in recent years. During the 2007 legislative session, lawmakers argued the merits of statewide setback restrictions, eventually killing a bill that would have required new construction to be at least 250 feet from the high-water mark of a major river and provide a vegetative buffer at least 100 feet wide. Proponents, including some real estate agents and developers, said the setbacks would help protect riparian environments while enhancing property values by protecting scenery. Opponents argued the bill would erode private property rights and overrule counties with setbacks different from those in the bill.

The stream setbacks controversy sometimes pits the rights of individual landowners against those of the public. But the issue is often more complex, such as when the action of one property owner affects property owners downstream. Some of the most effective approaches to river setbacks have moved beyond the "us versus them" perspective. In these cases, citizens find commonly held values, such as maintaining a healthy river, and then work on finding specific actions that preserve those values.

For sale: streamside lots

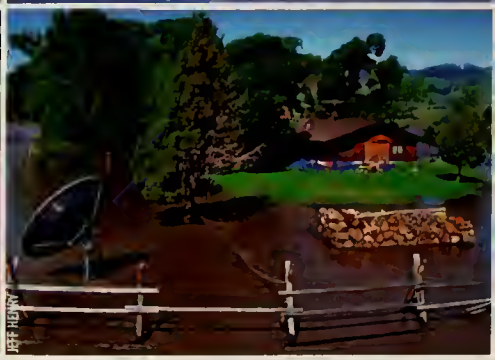
Riparian (streamside) development is growing fast, as more and more people move into Montana looking for property along a scenic trout river. According to the nonprofit Sonoran Institute, the number of homes built on quarter-sections of land next to the Yellowstone River in Park County (Paradise Valley) increased 32 percent between 1980 and 2005. In 2006 the conservation group American Rivers named the upper Yellowstone the second-most endangered river in the United States. Other western Montana rivers—including the Bitterroot, Clark Fork, Gallatin, Madison, and Missouri—also are seeing housing booms along their banks. A legislative analysis of development in 17 counties found that more than 400 homes have been built in floodplains since 1990, and that 3,800 structures valued at more than $250 million now exist in floodplains in those counties. Ron Spoon, FWP fisheries biologist for the Jefferson River, says real estate brokers frequently call him looking for tips on streamside property that have opportunities for fishing, wildlife viewing, and hunting. "They almost always speak at length about how their client 'wants to do the right thing,'" says Spoon. Unfortunately, the plans often include building a home right on the water's edge.

> "I've talked to people who said, 'Jeez, if we had known, we wouldn't have put the house there.'"

The problem has attracted the attention of state officials. In a 2006 letter to his agency directors, Governor Brian Schweitzer wrote, "Development along rivers and streams that destroys protective riparian areas is possibly the single most urgent ecosystem threat facing Montana today. Not only do these waterways and riparian areas provide fish and wildlife habitat, they also provide jobs and recreation."

Why all the concern about streamside habitat? After all, as FWP's Native Species Program coordinator Kristi DuBois points out, riparian areas are a "tiny portion of our landscape," comprising less than 5 percent of the state's total acreage. Yet DuBois explains that despite their relatively small size, ripari-

DOING THE WRONG THING Spring floods are natural processes that keep floodplains healthy and ecologically functional. The high, muddy water recharges floodplain wetlands used by shore birds and other wildlife, and it adds sediment that cottonwood seeds need to germinate. Unfortunately, many homeowners build along rivers not knowing how the natural systems function. Though they want to "do the right thing," says one biologist, their homes can damage the natural resources they want to live near.



an areas are crucially important for biological diversity, providing habitat for 75 percent of the state's plant and animal species.

Montana's storied fisheries depend on healthy riparian areas. "From an aquatic standpoint, riparian habitat provides all sorts of benefits for trout and the other critters that live in streams," says Chris Clancy, FWP fisheries biologist in the rapidly developing Bitterroot watershed. Vegetation along waterways reduces streambank erosion. It also traps sediment that can wash in from the surrounding landscape and cover clean gravel that trout need for spawning. Streamside plants add vital nutrients from leaves, provide food sources such as insects, and shade the water, keeping it cool. "Riparian areas are essential for the river to function as it's supposed to," Spoon says. Rivers also supply birds with nesting areas, seeds, and flying insects. Furbearers such as otters and muskrats live along the banks, and the lush vegetation and clean water attract deer, pheasants, waterfowl, and other game animals.

Riprap: a "losing game"

"We all have dreams of a house by a stream," says Clancy. "But because of the impacts involved, we can love these resources to death and disrupt the natural processes that create the very things that draw us to these rivers." The most immediate and obvious effect of riparian development is vegetation lost to bulldozers blading the building site and access road. Riparian development also disturbs soil, allowing noxious weeds such as knapweed and leafy spurge to thrive and crowd our native grasses and flowering plants.

Some of the worst damage to natural river systems comes from landowners trying to prevent their riverside property from being swept away during the high water that comes from spring runoff. Though flooding is a natural and essential river process, landowners attempt to protect their property by adding rocks that raise and fortify the banks. Called riprapping, this common practice may save some houses, but the tall, rock-lined banks provide little to no fish or wildlife habitat. Even worse, they constrain the river's flood energy and force it farther downstream, making things even worse for homeowners and communities there and encouraging them to riprap their own banks. "Riprap begets riprap, which begets more riprap," says Glenn Marx, a Jefferson River Valley resident active in the Jefferson River Watershed Council. "You don't de-energize water when you put in riprap; you just send more energy downstream. It's a losing game."

Another problem caused by riprapping is that floodplains "protected" from flooding by the boulder barriers are denied the essential influx of sediments and other natural resources carried by high water. One of Montana's natural wonders, the cottonwood forests towering along many rivers depend on periodic floods that sweep across the floodplain and deposit fresh mud that cottonwood seeds need for germination. Due in part to flood control, cottonwood regeneration has declined in many areas, putting at risk the many wildlife species that rely on these forests.

Perhaps the biggest problem, say biologists, are the cumulative effects of riparian development. An individual house may not do much harm, but add up all the habitat loss, bank degradation, and other ecological disturbance caused by streamside construction up and down a river valley, and "it really has a negative effect," says DuBois.

Spoon says that after a subdivision or home is built on a river, it's next to impossible to mitigate its effects on the riparian ecosystem and the fish and wildlife living there. "Once you develop the banks, that damage will be there for a long, long time," he says. Unfortunately, says Clancy, many homeowners learn too late that their new residence is creating problems: "I've talked to people who said, 'Jeez, if we had known, we wouldn't have put the house there.'" To help builders and property owners better understand how their activities affect riparian areas, Governor Schweitzer's Task Force for Riparian Protection has published a brochure outlining voluntary steps people can take to make their developments more river-friendly. "You need to let the river be a river," says Marx. "It needs to be able to flow and meander, to do what a river does in a naturally functioning system. The more you can protect that, the better off everyone is in the long run."

Floodplain construction defies common economic sense. For thousands of years, rivers carrying the spring snowmelt from Montana's abundant mountains have periodically surged over their banks. In some years there is little flooding. In others, such as in the Paradise Valley during the mid-1990s, flooding can be historically severe. When the inevitable big floods hit, the costs to individuals and communities can be enormous. The 1997 floods caused over $7.6 million in damage to Montana's public entities, including cities, counties, schools, and irrigation districts in 23 counties. "Building in the floodplain is like setting up your tent on the

A BAD RAP To keep their homes from flooding, landowners stabilize and raise the shoreline with boulders. Sometimes carried in on rail cars, the riprap forces floodwaters downstream, where they eventually burst out and inundate someone else's home, business, or town.

JOHN MCNEAL

highway when no cars are coming," says Vicki Watson, a University of Montana professor of environmental sciences.

Setbacks and buffers

Two of the most effective tools for protecting riparian areas are regulated setbacks (the minimum distance between a structure and a river) and vegetative buffers along the riverbank. Local governments have the authority through zoning, subdivision review, and other regulations to require setbacks and vegetative buffers. More than a dozen Montana cities and counties have now adopted riparian protection regulations.

Appropriate setback and buffer widths often depend on what people are trying to preserve. Maintaining a scenic vista, for instance, can require setbacks of a mile or more, while protecting a key piece of rare amphibian habitat might mean keeping development a shorter distance from the riverbank. As a result, setbacks and buffer widths vary markedly among Montana jurisdictions, depending on the nature of the stream, the specific resources being protected, the planning mechanisms, and political compromise.

NESTLED IN Setbacks and vegetative buffers help homes blend in to the landscape, protecting privacy. They also allow the river to continue functioning naturally—which includes providing habitat for the fish and wildlife that attract people to rivers in the first place.

"There isn't one generic buffer width that will keep the water clean, prevent flood damage, protect fish and wildlife, and satisfy demands on the land," concludes a planning guide produced jointly by Montana Audubon, the Montana Watercourse, and the Montana Department of Environmental Quality. Accordingly, some local governments have eschewed fixed distances for a more flexible approach that takes into account varying conditions along rivers.

> "Communities don't make conscious decisions to harm a river. But when they don't take action, that's in effect what they do."

At one extreme, for example, are Chouteau County's development permit regulations, which require that visible residences be set back a full 3 miles to protect the expansive "viewsheds," or vistas along parts of the Wild and Scenic Missouri River. Upstream on the Missouri, Lewis and Clark County subdivision regulations apply a river setback of 250 feet and a natural vegetation buffer of 100 feet to preserve natural resources, views, and recreational uses. Other Montana communities have setbacks of 50 feet or less.

Clancy says fixed distance regulations "can be simpler to administer, but you lose the sophistication of a more site-specific approach." Ultimately, communities need to determine what they most want to protect, and make choices based on those values.

Some Montanans such as Tim Davis, director of the Montana Smart Growth Coalition, advocate statewide setback standards. "It's important to be consistent across jurisdictional boundaries, because the actions of people upstream can cause flooding downstream, putting people in harm's way," he says. Others oppose a statewide, one-size-fits-all approach. Glenn Oppel, government affairs director for the Montana Association of Realtors, says his organization prefers that regulations arise through local planning and zoning, because "the landowner has a say and the opportunity to make a valid protest."

Landowner-driven solutions

The Big Hole watershed offers one local success story, a hybrid approach combining both fixed and flexible distances. A grassroots effort initiated by the volunteer Big Hole Watershed Committee resulted in standards covering the river's entire 160-mile length through four counties. The standards generally require anyone planning to build within 500 feet of the river to apply for a development permit. A permit may be issued if the development meets six criteria relating to public health and safety, riparian protection, and natural resource functions. Though structures typically must be 150 feet from the river, the distance may be modified to satisfy all the criteria. For example, a structure proposed for a highly erodible streambank might need to be set back farther than 150 feet.

How could four southwestern Montana counties succeed in approving riparian regulations when others have failed? Garth Haugland, chairman of the Beaverhead County Commission, is unequivocal. "The standards were landowner-driven," he says. "They didn't come from the top down." In numerous public meetings held throughout the Big Hole watershed, residents agreed that they wanted to preserve the essential floodplain and habitat functions of the river's riparian areas.

The Big Hole story is encouraging, but it is also anomalous. Most Montana riverbanks remain unprotected by statewide setbacks and buffer zone requirements. And while state lawmakers and city councils argue over setback restrictions and buffer zones, riparian development continues. "Communities don't make conscious decisions to harm a river," says Spoon, "but when they don't take action, that's in effect what they do."

Learn more about protecting Montana rivers by visiting http://water.montana.edu/setback. Get your free copy of the Governor's Task Force for Riparian Protection brochure at rray@mt.gov or (406) 444-5319.

Mary Vandenbosch and Jeff Erickson of Helena are freelance writers and policy and planning consultants.

American Pika

Ochotona princeps

By Els Van Woert

Also known as rock rabbits and whistling hares, American pikas are small mammals familiar to those who ramble in Montana's high-altitude backcountry. If lucky, a hiker might witness late-summer "haying," when pikas cut alpine vegetation with their teeth and stack it near their burrow entrances. To collect enough food to survive winter in the mountains, pikas make up to 100 trips in one day. At times, overly hasty pikas will even try to "hay" backpack straps and rock-climbing ropes.

DESCRIPTION American pikas look much like gerbils. Both males and females have white-edged ears and thick, gray-brown fur peppered with cinnamon-buff hairs. They have short legs, almost no tail, and egg-shaped bodies 6 to 8½ inches long.

Pikas also resemble their rabbit and hare cousins, but have smaller bodies and shorter, rounder ears. Like rabbits and hares, pikas are herbivores and have four upper incisors to chew plant material. Pikas eat hay, grass, leaves, flowers, bark, roots, and fruit. Like rabbits and hares, pikas eat their own soft, vitamin B–rich droppings to help digest the cellulose they consume.

Only two of the world's twenty-five pika species live outside of Asia, where they most likely originated. Scientists believe that pikas migrated across the Bering land bridge between Russia and Alaska during a glaciation period when the two continents were linked, perhaps as long as 30 million years ago. As temperatures warmed, the cold-loving pikas sought alpine habitats. Over time, various populations became geographically isolated from one another. Biologists now believe there are 36 different American pika subspecies inhabiting the United Stares and southern British Columbia.

DISTRIBUTION AND HABITAT American pikas live on boulder fields and scree slopes near meadows above tree line in the Intermountain West, including the Cascade and Sierra Nevada ranges of Washington, Oregon, and California, high areas in Nevada and Utah, and the Rockies from Colorado north through east-central Idaho, western Wyoming, and Montana. In Montana, pikas are found in all western and some central mountain ranges above 8,000 feet.

HABITS Pikas are active during the day, foraging, feeding, and watching for predators. In winter they tuck into rock burrows and consume the vegetation they cured and stored during summer. They do not hibernate, and on warm winter days sun themselves on rocks.

American pikas burrow alone and defend their feeding territories from one another. But if threatened by predators, pikas work as a team, making repeated, high-pitched calls to warn each other before diving into their burrows. (The name pika comes from the Russian word *pikat*, meaning "to squeak.") Sharp hearing, keen depth perception, and a wide field of vision help pikas escape eagles, hawks, coyotes, bobcats, foxes, weasels, and other predators.

BREEDING Pikas begin courting in May when males and females form pairs by cooing to each other from adjacent territories. The litters range from one to five young, which emerge from the den after a month and become fertile adults within a year. Pikas live an average of six years.

STATUS The American pika is an animal of cold, moist climates that can't survive in temperatures above 80 degrees. Scientists consider it the North American mammal most threatened by global warming. A 2003 report by the U.S. Geological Survey showed that more than 25 percent of local pika populations studied in the Sierra Nevadas east to the Rockies became extinct during the previous 20 years. Biologists say that if warming trends are not halted or reversed, American pikas could face extinction.

Els Van Woert is a freelance writer in Helena.

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BIG 'BOW ON THE BIGHORN

A healthy rainbow trout comes to the net on the Bighorn River downstream of Fort Smith. See our story beginning on page 9 to learn why low water releases from Yellowtail Dam threaten the future of this remarkable fishery. Photo by Barry and Cathy Beck.

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